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AUTHOR Rotatori, Anthony F.; And Others
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ABSTRACT

To test the effectiveness of behavioral approaches to weight control, 18 adult mentally retarded subjects were randomly assigned to a behavioral therapy or to a no-treatment control group. Behavioral therapy involved exposure to external and self reinforcement, stimulus control, simplified monitoring and recording, and energy expenditure procedures over a seven-week training period. The behavioral therapy subjects lost significantly more weight than the no-treatment control group. After the end of the training period, the behavior therapy subjects were exposed to a six-week maintenance program. (Author/LS)

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Multicomponent Behavioral Program for Achieving Weight Loss in the Adult Retarded

Anthony F. Rotatori
Northern Illinois University

Robert Fox
University of Wisconsin-Madison

Harvey Switzky
Northern Illinois University

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Weight Loss in the Adult Retarded
Anthony F. Rotatori, Ph.D.
Assistant Professor
Department of Special Education
Northern Illinois University
Graham Hall, Room 229
DeKalb, Illinois 60115

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Multicomponent Behavioral Program for Achieving

Weight Loss in the Adult Retarded

Review articles by Hall and Hall (1974) and Stunkard (1975) have indicated that a variety of behavioral approaches have been successful in assisting obese individuals in losing weight. These approaches included aversive conditioning (Morganstern, 1974), covert sensitization (Horan et al, 1975), contingency contracting (Kerseles, 1947), self control techniques (Martin and Sacks, 1973), as well as multicomponent techniques which have included environmental manipulations, energy expenditure, self directed strategies, and group learning procedures (Hall, 1972; Jeffrey and Christensen, 1975; Stuart, 1969).

In spite of the success of the above studies, only minimal attention has been directed towards demonstrating the effectiveness of behavioral approaches to weight control with mentally retarded individuals (Foreyt and Parks, 1975; Foxx, 1972). The paucity of research in this area is unfortunate because the association between intelligence and obesity is high and negative. Krege, Zelina, Juhas, and Garbara (1947) investigated the relationship between intelligence and obesity in 554 obese adults living in the community. The authors concluded that among the women there was a strong inverse relation between measured intelligence and obesity, with 41.4 percent of the obese women in the low IQ category (approximately 85 or below). A similar but less pronounced trend was observed among the obese men. The latter finding in conjunction with studies (Nordgren, 1970; Polednak & Auliffe, 1976) that have revealed a significantly higher frequency of obesity among institutionalized adult retarded than in adult non-retarded

groups, points to a significant health problem for mentally retarded individuals.

The purpose of the present study was to assess whether a multicomponent behavioral weight reduction treatment program could produce and maintain weight loss in overweight formerly institutionalized adult retarded individuals residing in a community-living facility.

Method

Subjects

Eighteen mildly retarded adults, who resided in a semi-independent residential intermediate care facility in northern Illinois, volunteered to participate in a weight reduction program.

All subjects left the facility each day to attend either a paid vocational assignment or a training workshop in the community. The following selection criteria were met by all subjects: (a) were not taking medication for weight loss, (b) were at least ten percent overweight (Robinson, 1967) and (c) were not presently involved in any other weight program. The subjects were randomly assigned to either the Behavior Therapy group or the Control group. Table 1 indicates ages, heights, IQ test scores, and initial percent overweight of the Behavior Therapy and Control group subjects.

Insert Table 1 about here

Mann-Whitney two-tailed U-Tests (Mann and Whitney 1947) comparing ages, heights, IQ test scores, and initial percent overweight were calculated to assure that the random assignment procedures did not result in any systematic intergroup differences with regard to these variables. No significant differences between the two groups on these variables were found ($U=18$ for age, $U=29$ for height, $U=39.5$ for IQ and $U=38$ for percent overweight, $p > .05$).

Procedure

The first author met seperately with the Behavior Therapy group and the Control group. The Control subjects were informed that the weight reduction program was already filled and that they should try to loose weight on their own. The first meeting with the Behavior Therapy group initiated the seven-week active intervention phase.

Instructional Component

The Behavior Therapy group met once a week over a seven week period. The meetings were designed to instruct the subjects in behavioral techniques for weight reduction and in procedures for completing homework assignments (i.e., food dairy, daily weight records). The behavioral approaches which were trained included the following: the manipulation of emotional responses (Hall, 1972), food cue elimination techniques (Stuart, 1969), changing the act of eating (Stuart and Davis, 1972), the use of energy to burn up unneedded calories, and the development of alternative activities to eating (Ferguson, 1975).

The manipulation of emotional responses involved instructing subjects to verbalize aversive consequences when tempted to overeat (e.g., "my boyfriend will call me fatty") and to verbalize pleasant consequences when the subject was successful in not overeating (i.e., "I'm going to look great"). Food cue elimination teaching techniques involved subjects specifying one place to eat meals and snacks, to leave some food behind on the plate, and to take only one helping. Changing the act of eating included eating slower, chewing food completely, and putting utensils down on the table between bites. The development of alternative activities to eating involved encouraging the subjects to engage in pleasant activities which compete with eating

such as going for walks, listening to records, or working on a craft project. Lastly, the subjects were instructed to burn up unneeded calories by engaging in a 10-minute calisthenics period twice a day.

A number of instructional modalities were employed to facilitate the retarded subjects' understanding of the behavioral procedures during the intervention phase. First, the behavioral procedures were verbally described by the experimenter. The rationale for the procedures was included in the description. Next the subjects were exposed to a video tape presentation of a mentally retarded resident modeling the procedures. After the video presentation the experimenter modeled the procedure for the subjects. This demonstration was followed by each subject practicing the procedure in a simulated situation two times. The experimenter then provided feedback to the subjects on their practice trials. Lastly, at the end of the meeting the experimenter talked individually with each subject about the procedure introduced at the session. This time was also used to review and discuss progress on procedures introduced at past meetings as well as answer questions the subject had about the treatment. All sessions lasted approximately 50 minutes.

Reinforcement Component

During the intervention phase, all subjects received monetary reinforcement from the experimenter for weight lost and for handing in completed homework assignments. Subjects had to lose one pound or more since the previous session's weight to receive reinforcement for weight lost. To be eligible for reinforcement for homework assignments, the subject had to hand in the completed data recording sheets that were passed out at the previous session. Each subject received $1.25 for losing one or more pounds since the last weigh-in. All subjects who handed in completed homework forms received $.25.

Additionally, all subjects were instructed in the techniques of self-reinforcement for carrying out the weight control procedures. The subjects rated their performance on the techniques they had been exposed to on a daily behavioral checklist. Based on their ratings, the subjects received a grade which was dependent upon total points earned for employing the techniques. The particular grades earned were then exchanged for an envelope which contained self-reinforcement guidelines. The self-reinforcement guidelines were divided into two areas, activity reward and covert reward. The self-reward activities were tailored to fit the subject's suggestions as to what was reinforcing for that individual (i.e., watching television, smoking cigarettes, going for a walk). The covert reward consisted of the subjects reading short positive comments about their performance.

Maintenance Condition

At the end of the intervention phase, Behavior Therapy subjects were randomly assigned into either a fixed or intermittent external reinforcement behavior therapy group. The maintenance training phase began one week following the 7-week treatment period, and lasted for forty-two days. During this phase each reinforcement group had a total of six sessions. The fixed external reinforcement group had a session once every seven days. The intermittent external reinforcement group met on an unannounced gradually increased schedule (days between sessions varied from three to twelve days). The maintenance meetings included: (a) a video tape presentation which reviewed the behavioral techniques presented during the intervention phase: (b) an audio tape which reviewed the rationale for the techniques employed during the intervention phase; and (c) a review of homework assignements.

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Follow-up

Ten weeks following the conclusion of the maintenance condition, the body weights of both the Behavior Therapy and Control subjects was obtained.

Results

Treatment (7 weeks)

Figure 1 presents the mean weight loss or gain in pounds for the experimental and control groups during the various instructional components.

Insert Figure 1 about here

A one-tailed Mann-Whitney U-test (Mann and Whitney, 1947) comparing percentage weight change between the Behavior Therapy and Control group subjects yielded a significant group difference. The Behavior Therapy subjects lost significantly more weight during the treatment period ($U=16.5$, $p < .025$). The Behavior Therapy group had a mean weight loss of 3.60 pounds with a weekly average weight loss of .53 pounds per subject. The Control group had a mean weight gain of 1.66 pounds with a weekly average gain of .24 pounds per subject

Maintenance (6 weeks)

There was no significant differences between the weight loss of the Behavi Therapy subjects on the fixed or intermittent reinforcement schedules as assess by a two-tailed U-test ($U=7$, $p > .05$). The Behavior Therapy subjects on the fixed reinforcement schedule had a mean weight loss of 1.00 pounds with an average weekly loss of .17 pounds per subjects. The Behavior Therapy subjects o the intermittent reinforcement schedule had an average weekly gain of .01 pound per subject.

Follow-Up (10 weeks)

A one-tailed U-test comparing the two Behavior Therapy groups in regards to differences in manitenance of weight loss from the last maintenance training session to the follow-up assessment revealed no significant difference ($U=8, p>.05$). The fixed reinforcement behavior therapy subjects had a mean weight gain of .75 pounds. The behavior therapy subjects in the intermittent reinforcement group had a mean weight loss of .20 pounds.

To assess whether a significant difference in weight lost still existed between the behavior therapy and control group subjects at the time of follow-up, a one-tailed U-test was calculated. The U-test yielded a significant difference for percentage of weight lost ($U=15$, $p<.025$). A two-tailed U-test was calculated between the pre-post weight difference for the control subjects. The U-test yielded a nonsignificant difference for percentage of weight gain ($U=13$, $p>.05$). In contrast a two-tailed U-test comparing pre-post weight difference for the behavior therapy subjects yielded a significant difference for percentage of weight lost ($U=7$, $p<.05$).

Discussion

The significant difference in weight loss between the Behavior Therapy and Control groups at the end of the treatment training period lends support to the successful findings of previous studies (Abraham & Allen, 1974; Jeffrey, 1974; Rozensky & Bellack, 1974) which have employed multicomponent treatment packages for weight reduction. The weight loss produced by the treatment package in the present study is not clinically impressive. However, Hall (1972) indicated that studies which have produced significant weight loss findings have also reported weekly weight loss rates which have ranged from .50 to 1.00 pounds. The findings of the present study compare favorably as the subjects attained weekly weight losses of .53 pounds per week during the treatment

training period. This weekly weight loss is considered good considering that the subjects in the present study were mentally retarded adults, whereas, the majority of the studies in the literature employed subjects who were college students or professional individuals. More significantly, the loss was maintained over a four month follow-up. Additionally, Jeffrey (1975) reported that in eight methodologically sound studies which have used a no treatment control group, the weight change of the control subjects ranged between $\pm$ 2 pounds (treatment periods between 6 to 10 weeks). The present study found that the control group gained 1.66 pounds in seven weeks. The consistency of the above findings demonstrates the need for experimenters to eleminate control groups which receive no treatment and to incorporate different treatment groups to determine the superior treatment of treatment package.

Few research studies in the area of obesity have included a post-treatment maintenance phase. This would appear to be essential due to the frequent and rapid return of lost weight at the time of follow-up (Hall & Hall, 1974). Jeffrey and Christensen (1975) incorporated an 18-week maintenance phase which stressed the reduction in subject-therapist contacts as well as the gradual elimination of explicit monetary response cost contingencies for the majority of subjects. Their findings indicated that the behavior therapy group maintained their weight loss between posttreatment and the end of the maintenance phase. The findings of the present study lend support to the incorporation of a maintenance phase as the subjects in the fixed reinforcement group averaged an additional 1.00 pounds loss during the six week maintenance period, whereas, the weight of the subjects in the intermittent reinforcement group remained relatively unchanged during this period.

Obesity is a significant problem for retarded adults. Since the institution (i.e., community living facility, nursing home, adult group home) is the

only living environment for many retarded persons, an important residential treatment consideration is the extent to which the living environment can assist obese retarded persons in eliminating a health-related variable that is recognized as a major problem in the United States (Polednak & Auliffe, 1976). The continued implementation of traditional calorie reduction-diets among institutionalized adult retarded persons deserves some serious reconsideration due to the demonstrated relationship between the initiation of a caloric reduction-diet and a significantly increase in acts of physical aggression against peers and staff (Talkington & Riley, 1971). The multicomponent behavioral program described in the present study provides residential staff with a weight reduction treatment which stresses the active, positive participation of the retarded persons as well as the teaching of appropriate eating habits. Lastly, for overweight retarded persons who will be placed in semindependent and independent community living environments in the immediate future (i.e., adult group homes, foster homes), the mastery of behavioral weight reduction techniques would appear to be more of a permanent therapeutic benefit than their experience in a traditional calorie reduction-diet.

Future research should concentrate on the development of more rapid and more effective techniques of weight reduction for the overweight adult retarded. Additionally, researchers should attempt to identify environmental variables which can promote maintenance of weight lost after active intervention ceases. Additionally, researchers should analyze the correlation if any between individual subject characteristics (i.e., type of obesity, percentage overweight) and specific techniques in the promotion of weight loss.

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Table 1

Ages, Heights, I.Q.'s and Percent Overweight for the Behavior Therapy and Control Group Subjects

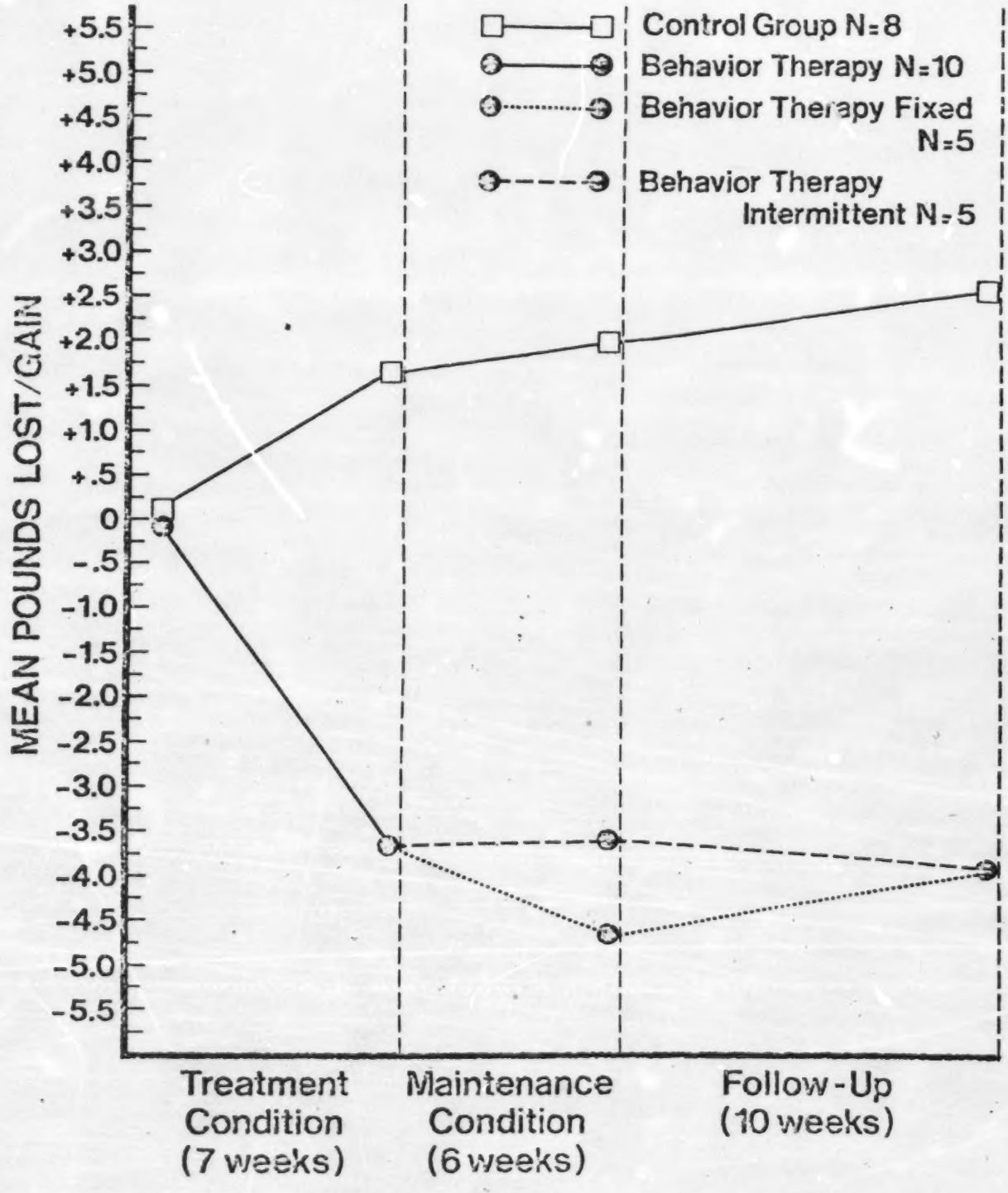
Group	Age[c]		Height[d]		I.Q.		Percent Overweight	
	X	SD	X	SD	X	SD	X	SD
Behavior Therapy[a]	31.80	6.95	65.10	2.39	62.30	8.09	29.30	15.83
Control[b]	39.25	7.19	63.85	2.34	65.41	8.07	29.38	15.66

a N=10 (5 males, 5 females)

b N=8 (4 males, 4 females)

c in years

d in inches


Control Group N=8
Behavior Therapy N=10
Behavior Therapy Fixed N=5
Behavior Therapy Intermittent N=5
MEAN POUNDS LOST/GAIN
+5.5
+5.0
+4.5
+4.0
+3.5
+3.0
+2.5
+2.0
+1.5
+1.0
+.5
0
-.5
-1.0
-1.5
-2.0
-2.5
-3.0
-3.5
-4.0
-4.5
-5.0
-5.5
Treatment Condition (7 weeks)
Maintenance Condition (6 weeks)
Follow-Up (10 weeks)

Reprints

Anthony F. Rotatori, Department of Learning and Development, Northern Illinois University, Graham Hall 229, DeKalb, Illinois, 60115.